Brain Cross Training
Computerized Cognitive Training
Stress, Anxiety & Depression

Mark Ashton Smith Ph.D.

2015

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Foreword

My training is in cognitive neuroscience. I earned my doctorate from Carnegie Mellon and the University of Pittsburgh's flagship Center for the Neural Basis of Cognition program. I have since worked as a Lecturer/Assistant Professor at the University of Cambridge's Experimental Psychology Department – the top ranking Psychology Department in the top ranking University in the UK - where the basis of IQ Mindware's training program was devised.

In this series of eBooks I present you with the most effective, evidence-based cognitive interventions within a brain 'cross training' paradigm that combines computerized brain training with other strategies to improve brain health, resilience, performance and creativity.

Enjoy your training!

Mark

Mark Ashton Smith, Ph.D.
Personal Website
IQ Mindware
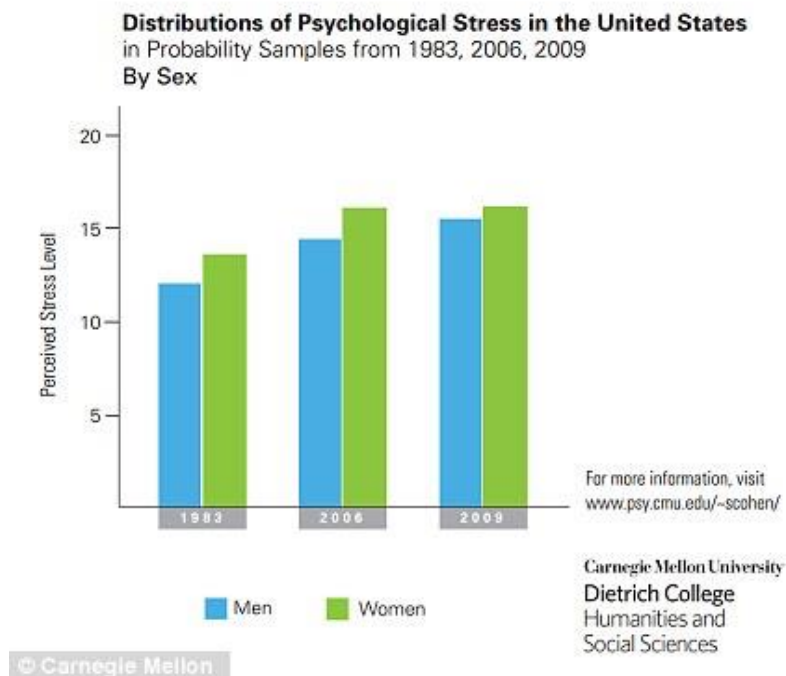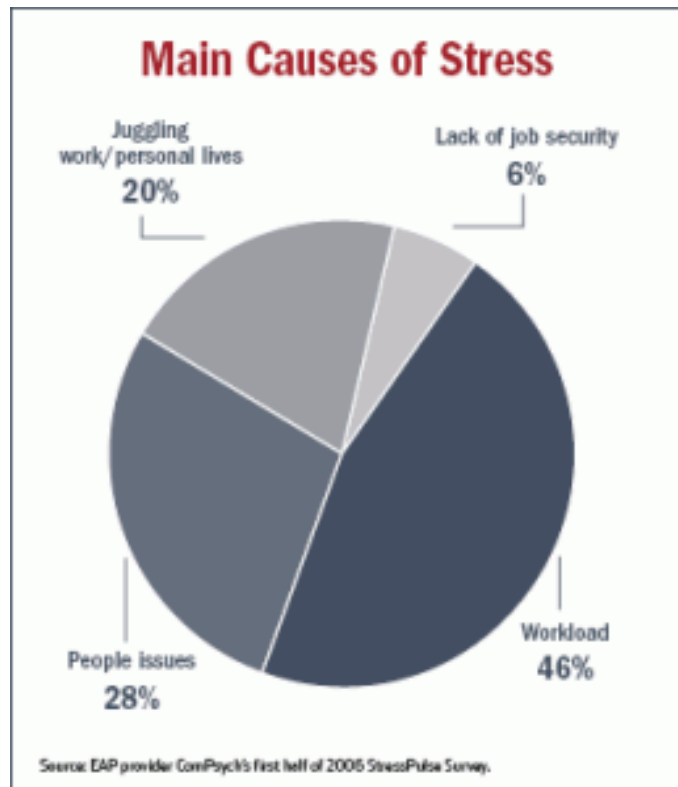LinkedIn

Cognitive Resilience

Cognitive resilience is **the capacity to both overcome the negative effects of stressors on cognitive function or performance and harness stress for greater cognitive performance.**

People differ widely in cognitive resilience. Some individuals are able to take in their stride negative stressors such intense work demands, interpersonal conflict, financial pressures or even loss of employment and poor health – stressors that can be devastating to other individuals. And very often these same individuals seek out stressors ('challenges') to motivate better cognitive functioning and performance. Others try to stay in their comfort zone, and in the face of unavoidable stressors, concentration, memory, problem solving and decision-making are all impaired.

Finding effective interventions to improve cognitive resilience is more important than ever because (a) there has been a steady rise in stress levels over the past generation, and (c) much of this stress is due to workload that is typically the demand for high output cognitive performance.

Distributions of Psychological Stress in the United States in Probability Samples from 1983, 2006, 2009 By Sex

For more information, visit www.psy.cmu.edu/~scohen/

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Humanities and Social Sciences

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Main Causes of Stress

Juggling work/personal lives
20%

Lack of job security
6%

Workload
46%

People issues
28%

Source: EAP provider ComPsych's first half of 2006 StressPulse Survey.

Cognitive resilience reduces susceptibility to mental health disorders such as anxiety, depression and burnout, as well as dementia, Alzheimer's. In recent years, UK doctors have been noticing a sharp uptick in visits from patients reporting stress, anxiety and dementia issues, and this trend is internationally widespread.

British GPs noticed an increase in visits for certain conditions

Share of GPs who noticed rising visits for...

Condition	Share
Stress and anxiety	84%
Mental health issues	55
Dementia and Alzheimer's	53
Obesity	50
Alcoholism / drug addiction	44
Musculoskeletal conditions	40
Diabetes	36
Irretable bowel syndrome	26
ME / Chronic fatigue syndrome	25
Cancer	21
Arthritis	16
Migraines	12
Heart disease	10
Stroke	3
Other	3
Asthma	2

Quartz | qz.com   Data: OECD, Aviva Health

Brain Health

Cognitive resilience is one aspect of brain health. Brain health interventions focus on building resilience and preventing stress-related disorders, brain disease and cognitive decline with aging as well as retraining the brain to regain cognitive function. The most effective brain health interventions capitalize on the brain's dynamic capacity to be strengthened in health and repaired after brain injury or brain disease.

Two major brain health problems common today are depression and anxiety.

Here we review evidence indicating that computerized cognitive training such as IQ Mindware can be of great benefit as an intervention for both depression and anxiety.

Depression

Depression is a condition in which a person feels discouraged, sad, hopeless, unmotivated or disinterested in life in general. When the feelings interfere with daily activities such as taking care of family, spending time with friends, or coping with work or school, this can be considered to be a major depressive episode.

[A high quality Queens College/University of Columbia meta-analysis](#) has just been published on the effects of computerized brain training on depression.

A meta-analysis involves combing all the publications on the topic and analysing them all for a reliable conclusion about the effectiveness of the intervention - e.g. brain training for depression. It's known that a single study can occasionally report some effect when in fact there is no effect. Finding reliable, valid effects is what meta-studies are designed for.

This meta-study analysed 9 well-designed studies looking at brain training for depression, and found:

- Improvement in depressive symptoms and every day and 'global' functioning.
- Improved working memory and attention

Global Functioning is a measure of social, occupational, and psychological functioning, e.g., how well or adaptively one is meeting various problems-in-living. This increased by what would be the equivalent of over 15 points in a standardized (e.g. IQ) test.

Attention and working memory (a measure of your 'mental workspace') increased by around 10-11 points.

These are very impressive effects, and we can confidently conclude that training with IQ Mindware apps can help in a substantial way with depression.

Based on the collective scientific evidence, an effective set of interventions for depression emerges:

- moderate exercise
- meditation
- computerized brain training (e.g. working memory training)

These brain cross-training strategies can be used concurrently with CBT, and help replace medication.

Anxiety

Anxiety disorders are characterized by exaggerated worry and tension, often expecting the worst even when there is no apparent reason for concern particularly with respect to money, work, health, and relationships. Individuals suffering from anxiety may suffer sleep disorders, feel on edge, and be constantly monitoring for potential threats.

[This University of London and Gent University study](#) looked at the effects of just three weeks of n-back training (implemented in [IQ Mindware](#)) on high anxiety individuals.

As with the depression studies, training effects were substantial:

> *"Our results showed that ...training related gains were associated with lower levels of trait anxiety at post (vs pre) intervention. Our results demonstrate that adaptive working memory training in anxiety can have beneficial effects on attentional control and cognitive performance that may protect against emotional vulnerability in individuals at risk of developing clinical anxiety."*

Both depression and anxiety can thus be treated with the right kind of computerized brain training, complementing other brain health strategies reviewed in subsequent eBooks.

IQ Mindware Users

These meta-analysis and lab results are consistent with user feedback from my own working memory training software - for those individuals who have been interested in brain training for stress, anxiety or depression:

> *"Since I am diagnosed with bipolar type -1 and ADHD, my anxiety and stress levels are very high at times. Currently, I am in university where the workload and social anxiety has caused me great anxiety in the classrooms. I am always second guessing my IQ and always never want to appear "stupid" to anyone. Due to this, I have played many brain training games and you are the only brain training game I have stuck with."* (J. G., University Student)

> *"I noticed a difference in being able to respond rather than react to negative emotions in others. I achieved a distance that allowed me to*

approach the situation from a more constructive angle, rather than allow their response to trigger a knee-jerk style reaction in me. I also noticed an increase in the amount of things I could keep in my mind at one time, which in turn reduces the sense of being overwhelmed. That would lead to a reduction in stress in most people if they have any sense of being overwhelmed." (J.L.)

IQ Mindware Apps

If you are interested in finding out more about the IQ Mindware app **i3** for brain performance, resilience and health you can do so at [this website](#).